DIGITAL ELECTRONIC CIRCUITS

1	Course Title:	DIGITAL ELECTRONIC CIRCUITS
2	Course Code:	EEM4315
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	4
6	Semester:	7
7	ECTS Credits Allocated:	4.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Öğr.Gör.Dr. İSMAİL TEKİN
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	Öğr. Gör. Dr. İsmail TEKİN E-posta:itekin@uludag.edu.tr Tel: (224) 294 2030 Adres: Elektrik - Elektronik Mühendisliği Bölümü, Ofis No:316
17	Website:	
18	Objective of the Course:	This course is designed to introduce engineering students to the basic structure and analysis of digital integrated circuits.
19	Contribution of the Course to Professional Development:	The ability to analyze and solve a problem with available data
20	Learning Outcomes:	

	1	Have an understanding of fundamental properties of digital integrated circuits
	2	Understand switching properties of diodes and transistors
	3	Become familiar with TTL circuits and learn analyzing of TTL circuits
	4	Become familiar with CMOS circuits and learn analyzing of CMOS circuits
	5	Have an understanding of difference between TTL and CMOS circuits
	6	Become familiar with BICMOS circuits and learn analyzing of BICMOS circuits
	7	Have an understanding of solid state memories
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Fundamental properties of digital integrated circuits.	
2	Switching of diodes and transistors.	

3	Fundamental properties and analyzing of TTL circuits.	
4	Fundamental properties and analyzing of STTL circuits.	
5	Fundamental properties and analyzing of ECL circuits.	
6	Fundamental properties of MOSFET and using MOSFET as a resistive load	
7	Midterm	
8	NMOS inverter and NMOS digital integrated circuits.	
9	CMOS inverter and CMOS digital integrated circuits.	
10	Fundamental properties and analyzing of BICMOS circuits.	
11	Interfacing of logic families.	
12	Comparison of logic families.	
13	Semiconductor memories.	
14	Final Exam	

22	Textbooks, References and/or Other Materials:	1. Thomas A. Demassa, Zack Ciccone, “Digital Integrated Circuits”, John Wiley & Sons, 1996. 2. John E. Ayers, “Digital Integrated Circuits: Analysis and Design”, CRC Press, 2 edition, 2009 3. Lecture Notes.

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	3.00	42.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	16.00	16.00
Others	0	0.00	0.00
Final Exams	1	20.00	20.00
Total Work Load			136.00
Total work load/ 30 hr			4.00
ECTS Credit of the Course			4.00

Measurement and Evaluation Techniques Used in the Course: Measurement and evaluation are carried out according to the principles of Bursa Uludağ University Associate and

24 ECTS / WORK LOAD TABLE

25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS

	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0

ÖK5	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**